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THE NEXT MOVE

ONE HUNDRED AND NINETY-ONE days after its introduction in the House of Commons, the Gas Act received the Royal Assent on July 30, and, for good or ill, all the gas industry's property, rights, liabilities, and obligations will, on a date which remains to be appointed by order of the Minister of Fuel and Power, vest in the Gas Council and the 12 Area Boards. The next move is for the Minister to fix the vesting date, which is not likely to be before April 1, 1949, and to announce the names of those whom he has appointed to be members of the Area Boards. In its passage through Parliament the Act underwent 379 amendments, of which 252 were made in the Commons, and 127 in the Lords. The proceedings occupied 178 hours in the Commons and 24 hours in the Lords; 18 amendments made in the Upper House were rejected by the Government in the Commons. More than one Parliamentary record was established in the House of Commons, where the last of 36 meetings of the Committee considering the Bill continued for 50 hours. Without going into detail it may be said that the measure was considerably improved by the amendments made as the result of its prolonged and detailed scrutiny in Parliament.

It is appropriate at this juncture to comment on the way in which the whole question of nationalization has been handled by the British Gas Council, and the extremely able manner in which, clause by clause and word by word, the Act has been scrutinized by the B.G.C. in general, and its General Manager, Mr. J. R. W. Alexander, in particular. The history of nationalization dates from the submission, in November, 1943, of the Planning Report of the British Gas Federation—an organization wound up this year. That report envisaged voluntary integration under a "British Gas Association," and although the "Association" was never in fact formed, steps were taken early in 1945 to merge the National Gas Council and the British Commercial Gas Association into the British Gas Council, which was formally incorporated in 1946. The Heyworth Report, presented some time after the 1945 General Election by a Committee appointed by the Coalition Government, favoured public ownership and regionalization. The Labour Government, however, took office largely on a nationalization programme, and in July, 1946, District meetings of the B.G.C. (technically they were meetings of member undertakings of the two parent bodies, for the B.G.C. had not at that time acquired full status) resolved that the industry was not in favour of the principle of nationalization, but that if the industry was to be nationalized, it would co-operate with the Ministry to ensure the best possible service under nationalized structure and organization. The voting was not unanimous, partly because some of the municipal undertakings were in favour of public ownership, and partly because there was a small right wing minority who would have nothing to do with nationalization, whatever happened.

From then onwards, still reserving its right to oppose the principle of nationalization, the B.G.C., at the invitation of the Ministry, submitted a series of memoranda on various aspects of nationalization, including a draft layout of the areas, and was in fact in consultation with the Ministry during the drafting of the Bill and its passage through Parliament with a view to securing the most suitable measure in the interests of consumers, owners, and employees. Detailed "briefs" were prepared in support of amendments moved on behalf of the B.G.C., and information and statistics were provided as needed. It was a matter of regret to the B.G.C. that the Government did not see fit to provide for the compensation of the owners of gas undertakings on more equitable terms; it was urged that compensation on the basis of Stock Exchange prices would result in a substantial loss of income and capital by the stockholders of company undertakings, while by the mere repayment of the outstanding loans of local authority undertakings the Government would acquire £94 mill. of assets for £21 mill. compensation. Efforts were made to secure compensation for stockholders by the valuation of their securities on the basis of the sale of the undertaking as a going concern between a willing buyer and a willing seller, and for local authorities on their real value; indeed an amendment to that effect was passed by the Lords, but was subsequently rejected by the Commons.

We have reported during the past seven months the proceedings on the Bill. In retrospect it may be said that the financial clauses of the Bill were improved in many respects, notably: Provisions were added to ensure full implementation of the interim development finance assurance and the interpretation thereof; Stock Exchange quotations are not to apply unless business has been recorded within a prescribed period; additional compensation in respect of war damage is extended to holders of preference stock and is to be based on an average of the decrease in sales in the war years, while the losses of subsidiaries may be included in the claims of holding companies; and severance compensation to local authorities was increased from £2 mill. to £2½ mill. and to composite companies from £3 to £3 10s. per 1,000 therms. One important improvement is that in computing the value of unquoted securities the Arbitration Tribunal is to be entitled to take into consideration "all relevant factors" relating to those securities.

As originally drafted, the Bill contemplated the winding up of co-partnership schemes, but in its amended form it says that provision shall be made by regulations for continuing existing schemes for such period after the vesting date as may be specified in the regulations, with such adaptations and modifications as appear to the Minister to be necessary or expedient. Finally, the House of Lords introduced an amendment, which the Commons accepted, providing for the taking over, as if they were gas undertakings, of the British Gas Council, Federation of Gas Employers, National Federation of Gas Coke Associations, and Asso-

ciation of Gas Corporations. It would have been ironical if the staff of the body which had done so much to improve the Act had been turned adrift, but, as we have said, it was not until almost the closing stages of the Bill that their position was clarified. Those who, in the early days of 1945, sought ways and means of co-ordinating the work of the two parent bodies planned more widely than they could have realized at the time, for the gas industry's case could not have been more efficiently handled than by the British Gas Council as at present constituted.

C.W.G. FROM WAX

TOWARDS the end of the war and for a little time after its cessation the aim was to gasify as much oil as possible to supplement the coal gas derived from carbonization. There was maximum carburetting in water gas plant, and many experiments were made in the gasification of oil in various types of retort, to cope with the demand for gaseous fuel. It was anticipated that in the present economic circumstances the continued use of such large quantities of gas oil would be discouraged, and accordingly, Humphreys and Glasgow, Ltd., began to investigate other possible sources of enriching media which could be used in existing water gas plants without substantial alteration to the carburetting and other equipment. They found eventually that the characteristics of petroleum wax distillate appeared to fulfil the requirements.

Having ascertained that considerable quantities of Iranian wax distillate could be made available, Humphreys and Glasgow, Ltd., carried out a full scale test at the works of the Bury St. Edmunds Gas Company. We have seen the results of this test, which show that this wax distillate gives results almost as good as those obtained with gas oil. We may mention that during this particular test the calorific value of the gas made was 487 B.Th.U. per cu.ft. when using 2 gal. of wax distillate per 1,000 cu.ft. of water gas, and that each gallon of the wax gave the equivalent of 1·22 gaseous therms. Further investigations are proceeding. The only disadvantage in the use of wax distillate as compared with gas oil is that the former is solid at normal atmospheric temperatures and must, therefore, be heated for handling. Owing to the shortage of heated tanker cars supply of wax distillate would probably be restricted at any rate at the outset to those gas undertakings having dock facilities for unloading tankers. Even so, the subject is of high current interest, and it is further indication of the keenness with which Humphreys and Glasgow watches the horizon for possibilities and developments likely to benefit the gas industry. Necessarily this is a short note, but we hope before long to be able to amplify our remarks by publication of the results of further trials now in progress.

GAS IN THE POTTERIES

THE phenomenal rise in the demand for gas in the district served by the Gas Department of the City of Stoke-on-Trent continues. This district covers practically the whole of what is known as the Potteries, with the exception of Newcastle-under-Lyme. And it is clear that most of this rise is due to the continued expansion of the use of gas in this basic industry of the district, for, while domestic consumption also continues to rise, industrial consumption accounts for 56·4% of total sales. Mr. J. E. Stanier, in his annual report, shows another year of record output, an all-time record of over 5,250 mill. cu.ft., an increase of nearly 10% over the previous year. And he anticipates that in the coming year Stoke's output of gas will be of the order of 6,000 mill. cu.ft. These are remarkable figures—particularly when compared with the 2,696 mill. of 1938.

One of the main features of the increase in industrial consumption is the growing popularity and realization of the success of the tunnel kiln. The total number of town-gas fired tunnel kilns at the end of the year covered by the report was 119, and this market has by no means reached saturation. The Gas Department has enquiries before it for supplies to a considerable number of new tunnels. Indeed, the limiting factor in this development is the speed at which new gas-making plant can be erected. To meet the coming expansion the recently completed vertical retort plant is to be increased by the addition of another unit of 2 mill. cu.ft. daily capacity. It is hoped that this will be in production by 1950. The Ministry has also approved in principle a scheme for a completely new plant on a neighbouring site with coal and coke handling plant and all ancillaries with daily capacity of 8 mill. cu.ft. It is estimated that it will be approximately five years before this major extension can be finally completed. And it is hoped that further quantities of coke oven gas will shortly become available.

The traditional "pot bank" equipped with coal-fired intermittent ovens is characterized by the emission of volumes of smoke and soot due to incomplete combustion. All that is rapidly being cleaned up by the gas-fired tunnel kiln capable of a very high degree of fuel and coal economy and applicable to the firing of all kinds of ceramic wares from glazed tiles and sanitary ware, through earthenware to the best grades of china. Mr. Stanier described its many advantages in his paper "The Utilization of Town Gas in the Ceramic Industry" which he presented to the "Fuel and the Future" Conference in 1946. With the cold air-dried wares travelling counterflow to the products of combustion from the firing zone and then the hot wares delivering their heat to the incoming air and gas, it is clear that the maximum of gas economy can be attained. But the coal economy is no less striking. A ton of coal treated at the gas-works provides the necessary amount of gas for firing the same quantity of ware as would need 1·2 tons of raw coal. But this is an understatement for, taking into account the residuals of the gas-making process, the ultimate coal economy is equivalent to saving more than two-thirds of the heat value of every ton of coal now used in the intermittent kiln—a saving which will ultimately amount to something of the order of half a million tons of coal per annum in this district alone.

This economy has by no means reached finality. Apart from improvements which can be made in the design of the kilns and their "furniture," the possibility of dispensing entirely with the protective "saggar," still used with the highest grade of wares though reduced in weight, waits upon a reduction of organic sulphur content in the gas to a greater extent than the Stoke Undertaking has yet gone. Even fuller utilization of "waste" heat may provide heat for space warming and steam raising. The concomitant advantages are similar to those which generally attend the substitution of a clean, readily controlled gaseous fuel for raw solid fuel, the improvement in the ware resulting from a steadily rising and falling heating curve with the eliminating of spoilage in the kiln, and very great economies in labour cost, not only in the handling of fuel and ashes, but in that of the wares; "the regular output of a tunnel kiln can be dealt with by between one-third and one-half the number of men required to place and draw the saggars in a periodic kiln."

The Gas Undertaking of Stoke will be a valuable property to pass into the ownership of the State under the new régime. Centralization of manufacture at the Etruria Works, finally accomplished by Mr. Mackay in 1927 and ably developed by his successor, has resulted in a works admirably designed and thoroughly well maintained.

INDUSTRIAL PSYCHOLOGY

The T.U.C. showed itself to be alive to current needs when it recommended support for the Government's White Paper on the control of wages and prices. It is again showing itself in the vanguard

of industrial thought, this time in a campaign in support of industrial psychology which is designed to remove the long-standing tradition that production experiments of this order are a disguised means of tricking people into doing more for smaller wages. Recently the General Council of the T.U.C. passed a resolution declaring that trade unionists must welcome a scientific approach to industry. This is followed up in the T.U.C.'s *Industrial News*, which is circulated to the editors of trade union magazines and to the Press: " The more trade unionists know about snags that hold up production the better equipped they will be to advise on how to make the workshops happy and efficient places in which to turn out goods. Every month's delay in getting and using the knowledge means another month's delay in the struggle to keep and raise the living standards of the British people. Reasons like these have prompted the T.U.C. to make several new moves in the production battle. The first is in the nature of an experiment. When industrial processes are broken down into a number of operations easily learned and easily carried out by the workers, does output always go up ? Or are workers so bored with over-simplified jobs that the advantages cancel out because the workers are constantly seeking to change their jobs ? . . . To questions of this sort the National Institute of Industrial Psychology offered to try to find the answers. The Schuster panel on human factors in industry (two T.U.C. representatives are members of it) approved the idea. Now the T.U.C. has given its blessing to the project and is to ask its affiliated unions to help by seeking the goodwill of their officers and members at places suitable for the experiments to be made."

The T.U.C. is hoping by this means to supplement the work already being done at a higher level by such organizations as the British Institute of Management, the Government Committee on Industrial Productivity, and the Administrative Staff College. In this way it seems that opposition to what looks like a second industrial revolution may be overcome. In the first, machines were wrecked by workers who feared (on the short-term view with some justification) that they would be replaced. In this industrial-psychological revolution the fear is that the craftsman will disappear more than ever and become an automaton at the service of a machine.

Personal

Mr. H. A. MILLER, Assistant Manager of the Market Harborough Gas Department, has retired.

* * *

Mr. W. H. EMERY, F.C.I.S., formerly General Manager, has now been appointed General Manager and Secretary of the Alresford Gas Company. The Engineer is Mr. C. BIRCHMORE.

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Mr. K. J. MCKILLOP, Secretary of the Water Tube Boiler Makers' Association for the last three years, has, in view of the widening of his responsibilities, been appointed Director of the Association as from Aug. 1.

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Following the retirement of Major J. E. FAIRGRIEVE, M.C., Mr. C. STOTT, M.C., B.Sc.(Leeds), A.R.I.C., M.I.Chem.E., M.Inst.Gas E., has been appointed Assistant Chief Engineer of the South Metropolitan Gas Company and Engineer in Charge of its East Greenwich Works. Mr. T. A. BUTLER, A.M.I.Mech.E., has been appointed Chief Mechanical Superintendent.

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Mr. D. A. PALMER has been elected Chairman of the Board of Reavell & Co., Ltd., Ipswich. Mr. R. L. QUERTIER, who has been appointed Deputy-Chairman, will share the duties of Joint Managing Director with Colonel K. REAVELL. Mr. Quertier will be responsible for design, research, and development, and technical sales, and Colonel Reavell will deal with commercial sales and the supervision of the works.

That Restrictive Practices are still being carried on in some coalfields despite clauses in the five-day week agreement that they should be dropped is the belief of Mr. Ebby Edwards, labour relations member of the National Coal Board. As Chairman of a Joint Committee established last month by the Coal Board and the National Union of Mineworkers, Mr. Edwards has asked all Divisional Coal Boards for detailed evidence of artificial hindrance to production such as at Grimethorpe, where miners refused to undertake extra tasks, or "stints," where there is a joint agreement between management and the local union officials that these can be undertaken in normal working shifts. A definite increase in production is possible even with the existing labour force if extra stints were worked in all cases where they are considered reasonable. When he has collected evidence from the Divisions, Mr. Edwards will put it before his Joint Committee to see what can be done to improve matters.

Parliamentary Notes

At Question Time in the House of Commons on July 15, the Member for Burslem asked Mr. Gaitskell, the Minister of Fuel and Power, what action was being taken to reduce the distribution costs of industrial and domestic coal. Mr. Robens, again replying for Mr. Gaitskell, said that the question had been answered on Jan. 29, and that he had nothing to add to the reply then given. (The reply by the Minister of Fuel and Power was: " . . . there are many difficult problems in raising the efficiency of retail distribution which are not at all peculiar to coal. I have, however, no reason to believe that excess profits are at present being obtained by coal distributors, and both wholesale margins and retail prices are, of course, controlled by Order. The National Coal Board are actively engaged on the formidable task of rationalizing the quality and size descriptions of the very numerous grades of coal at present being sold, and of determining proper price relationship between the various grades. Moreover . . . the National Coal Board will shortly be opening discussions with distributors on the general question of the Board's relationship with them. I have no doubt that the desirability of reducing distribution costs will figure prominently in these discussions.")

Electricity Supply (Rural Area)

The Member for Totnes asked what degree of priority was being given to the provision of electricity supplies to farms and farm labourers' cottages. Mr. Robens stated that here that priority was a very high one where the workers assisted food production; the Electricity Commissioners' circular of Feb. 18 laid down the priorities, and the application of the principles was a matter for the Area Boards concerned. The Member for Denbigh joined in to say that as far as the rural areas of Wales were concerned, virtually no work had been done in connexion with the supply of electricity.

Electricity and Gas Accounts (Collection)

The Member for Hackney asked if the system of collecting electricity accounts by the local authorities was working satisfactorily; and if it was intended to extend the same system to the collection of gas and water accounts. Mr. Gaitskell indicated that the temporary arrangements under which some local authorities were carrying out certain services for electricity boards were working satisfactorily. The various gas area boards would have to decide if the same system would be put into practice, and would have to work with local authorities in negotiations. On the same day, the Member for Dorset, South, brought up the question as to whether the present output of coal was sufficient adequately to meet the needs of the domestic consumer during next winter. Mr. Gaitskell pointed out that the export trade and home demands could scarcely be met at present by coal output. Stocks of house coal were 200,000 tons above last year's figure, but allocations for next winter would not be decided until the autumn.

COKE WITHOUT LICENCE

The Minister of Fuel and Power has issued a General Direction (1948, No. 1644) under the Coal Distribution Order, 1943, providing that coke may be supplied without licence during the summer period, up to a maximum annual quantity of 40 cwt. This action has been taken in view of the heavy stocks of coke at many gas-works.

A letter has been sent to the engineers and managers of all gas undertakings asking them to give publicity to the Order and, if they have surplus stocks of coke, to advise customers to take the opportunity of building up their coke stocks for the winter.

NEW CANTEEN AT STOCKPORT

Opening a new canteen at the works of Stockport Gas Department the Mayor (Alderman Harry Ponsonby) reminded his audience that whether the undertaking was nationalized or remained a municipal enterprise, the utmost co-operation between workers and management was essential. Frustration and friction, he said, had been overcome by the formation of a joint works committee. It should be the continual desire of all concerned as servants of the public to foster even greater understanding.

The Mayor was entertained to lunch in the canteen, together with Wing-Commander N. J. Hulbert, M.P., Councillor S. J. Hall, Chairman of the Corporation Gas Committee, Mr. J. H. W. Glen, Town Clerk, and Committee members. The new canteen can accommodate 280 people at one sitting.

Wing-Commander Hulbert remarked humorously that the meal was " much better and cheaper than those served at the House of Commons canteen, where the staple diet is whale and beaver meat." He congratulated the undertaking on keeping down the price of gas for its 57,000 consumers to only 30% above what it was before the war.

News in Brief

Scunthorpe Gas Department has received sanction from the Ministry of Fuel and Power to proceed with the scheme for a new high pressure main at a cost of £27,200.

Gas Appliances, including wash boilers, cookers, and radiators, have been included as standard appliances in 104 houses and flats which comprise a new housing estate at Llandudno. The Ascot sink gas water heater has also been used throughout the scheme.

Seventy Members of the Hawick Branch of the Women's Gas Council recently visited the works of the Hawick Gas Company. Mr. Robert Cowie, Manager, gave a brief explanatory talk, after which the party was conducted over the works, including the laboratory. Tea was served in the garden of the Manager's home.

After 47 Years' Service Mr. Isaac Pedler, boiler fireman at the Effingham Street Works of the Sheffield and District Gas Company, has retired. He has never been late or absent from work. In Mr. Pedler's case the record is all the more remarkable because for 18 years (including the war years from 1939 to 1945) he was engaged on shift work seven days a week.

A Special Study Group has been set up by the Incorporated Sales Managers' Association for the purpose of examining the economics of distribution and producing a scientific study of all the ramifications thereof. Mr. R. J. Gregg, Sales Manager of Ascot Gas Water Heaters, Ltd., is a member of this Study Group, which is meeting regularly. The results will eventually be published through I.S.M.A.

Winning Second Prize in a recent cricket carnival procession at Maidstone, Kent, the Maidstone Gas Company were beaten only by an ambitious effort by one of the town's motor agents. The Gas Company's entry was a van carrying part of the kitchen of a house bordered with water heaters and illustrating the text "Bringing up father—the Gas Way." The hot water supply at the sink in the model was obtained from the lorry's water circulating system.

The 53rd Report of the Joint Research Committee of the Gas Research Board and the University of Leeds, published by the Gas Research Board at 1s. 6d., post free, is the fifth part of an investigation which has been carried out into the use of oxygen and high pressure in gasification and completes publication on research work in that subject. The work described was carried out as part of the general programme of the Joint Research Committee in 1938-39. The report was prepared for publication but was withdrawn for national security reasons. A note on later work appears as an appendix.

Britain's Coal Exports including bunkers during the first 29 weeks of this year exceeded 8 mill. tons, or over 2½ mill. tons more than in the whole of 1947. Up to July 24 4.7 mill. tons had been sent to foreign countries or more than in any single year since 1941 when foreign cargo shipments amounted to just over 5 mill. tons. Shipments overseas, exclusive of cargoes for bunker depots abroad and ocean-going ships' bunkers, have increased from 264,500 tons in January to more than 1 mill. tons a month in June and July. During the week ended July 24, 291,000 tons were shipped abroad.

Rotherham Gas Department has just completed a very successful "Home Laundry Week." Arranged in conjunction with the Home Service Department, a special display was made of the latest types of appliances connected with home laundry, and Messrs. Crosfield, Watson, and Gossage, Ltd., co-operated by providing one of their staff who demonstrated the "Persil Home Laundry Plan" twice daily in the showrooms. These lectures proved popular and were well attended. The Persil Demonstrator, Miss Bolshaw, and the Rotherham Home Service Supervisor, Mrs. Turner, were also in attendance all the week answering questions and solving laundry problems.

During the Jubilee Celebrations of the Institution of Heating and Ventilating Engineers the Council was pleased to accept an offer from Mr. C. G. Vokes to provide a sum of money to be used to further the science and art of air conditioning. The Council has decided to establish a fund from which it is proposed to make annual awards during the next few years to be known as the Napier Shaw Premium. The premium will be awarded to the author of an outstanding written contribution to the science and art of air conditioning submitted to the Institution. The premium will normally be £25, but the Council may vary the amount at its discretion. Two methods of award have been decided upon to apply at the discretion of the Council in alternate years—namely: (*a*) A premium to be awarded to an author who has been specially invited by the Council to prepare and read before the Institution a paper on some aspect of air conditioning or on a subject closely allied thereto; and (*b*) a premium to be awarded for the best paper on some aspect of air conditioning or on a subject closely allied thereto submitted in an open competition. The competition is not restricted to members of the Institution. The award for 1948 will be made by method (*a*), and Dr. T. Bedford has consented to prepare the first Napier Shaw Premium paper. The award for 1949 (closing date for submission of papers Mar. 31, 1949) will be in accordance with method (*b*).

The Offices of Blackburn Gas Department are to be transferred from the Town Hall to premises in Cardwell Place, formerly occupied by the Public Assistance staff.

Blackburn Corporation is to borrow £15,000 to cover the cost of services and mains for new houses and increased size of mains where the supply is inadequate. The sum of £5,000 is also to be borrowed to meet additional expenditure in connexion with laying gas mains and the installation of a governor at the gasholder at Greenbank Gas-works.

At the Herts Show held recently at Watford one of the most popular exhibits was the gas and coke stand staged jointly by the Barnet District Gas and Water Company, the Berkhamsted Gas Company, and the Watford and St. Albans Gas Company. The main feature of the exhibit was the home service stand, staffed by seven demonstrators, which dealt with innumerable enquiries during the day. There were also sections dealing with coke, greenhouse heating, model kitchens, gas on the farm, and a wide range of domestic appliances. Despite threatening weather, the show was attended by 15,000 people.

The Gas Light and Coke Company announces that the price of gas consumed after meter readings on or after Sept. 1 will be increased by 0.6d. per therm. Of this amount, 0.4d. per therm is authorized by a permit granted by the Minister of Fuel and Power and is due to increases in wages that took effect on Feb. 1, under a decision of the London Regional Gas Industrial Council, and on April 4, under a decision of the National Joint Industrial Council for the Gas Industry. The remainder of the increase, 0.2d. per therm, is due to increases in the price of coal on July 19, and will take effect by virtue of the Gas Charges Order, 1947, as modified by the Gas Charges (No. 2) Order, 1947.

Diary

Aug. 26—Sept. 11.—**Machine Tool and Engineering Exhibition,** Olympia, London.

Sept. 9.—**North British Association of Gas Managers**: Annual Meeting, Cowdray Hall, Aberdeen.

Sept. 13-17.—**Association of Public Lighting Engineers**: Annual Conference, Winter Gardens, Devonshire Park, Eastbourne.

Sept. 14.—**British Gas Council**: Central Board, Gas Industry House, 2.30 p.m.

Sept. 14.—**Federation of Gas Employers**: Central Committee, Gas Industry House.

Sept. 14-15.—**Irish Association of Gas Managers**: Annual Meeting Cork.

Sept. 15.—**B.G.C. Domestic Development Committee**: Technical Sub-Committee, 10.30 a.m.; Main Committee, 2 p.m. Gas Industry House.

Sept. 22-23.—**Wales and Monmouthshire Association of Gas Engineers and Managers**: Autumn general meeting, Newport.

Oct. 18.—**London and Counties Coke Association**: Annual Luncheon, 1 p.m. for 1.15 p.m.; Annual General Meeting, 2.45 p.m. Grosvenor House, Park Lane, W.1.

Oct. 26.—**Southern Association of Gas Engineers and Managers**: Annual General Meeting, Connaught Rooms, 2.30 p.m. (preceded by Council, 11 a.m.).

COVENTRY COOKERY BOOK

As a contribution to post-war food planning the Home Service section of the Coventry Gas Department has published a new "Mr. Therm's Cookery Book," which was publicly launched by the Mayoress, Mrs. W. H. Malcolm, at a recent meeting of the local branch of the Women's Gas Council.

In a foreword, Miss L. Chalmers, Home Service Adviser, says the necessity for a clear and concise practical recipe book in the home is apparent from the large number of consumers who approach her and ask for hints on cookery and the diverse information required by the hardest worker in the world—the housewife. Shortage of recipe publications, restricted food commodities, and the need for food advice to newly-weds and to industry-employed women now obtaining homes for the first time.

The book is obtainable by genuine applicants free of charge from the Home Service section of the Department.

At the meeting at which the book was launched the Coventry branch of the Women's Gas Council decided to "adopt" Bievliet, a small town in the Netherlands. It will send a regular supply of clothing and other comforts to the Burgomaster of the Town. Mr. J. Steed, Sales Manager at Coventry, was stationed there during the war, and the friendships he made there have led to this link between Coventry and the Netherlands.

GAS AIDS EXPORTS

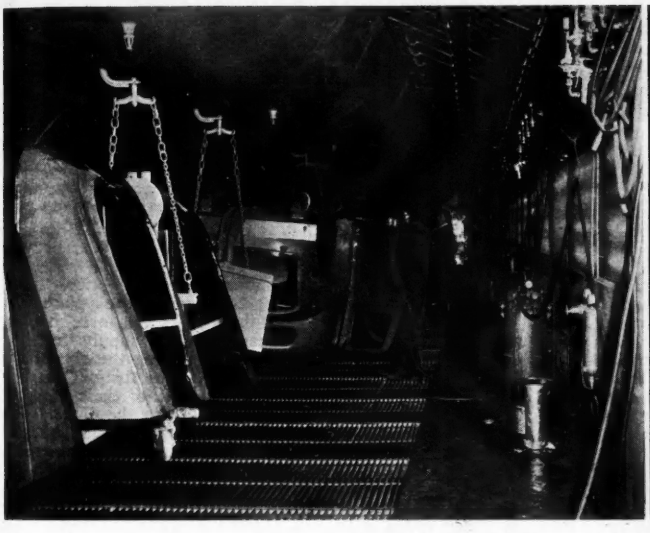
A MODERN FUEL FOR A MODERN TECHNIQUE

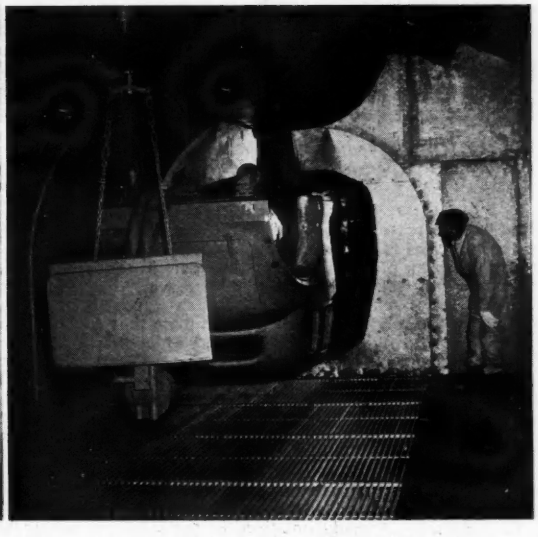
WHEN the Austin Motor Company, Ltd., launched a new small car intended for world markets and as a direct dollar earner in the U.S.A., one of their problems, while achieving a higher rate of output, was the provision of a car finish more protective, more durable, and of fuller lustre. Last week the British Gas Council, in collaboration with the Austin Company, arranged for a visit of representatives of the Press, and others interested, to the Longbridge Works of the firm; and on that occasion we had the opportunity of learning at first hand how this problem was solved by the aid of gas.

First of all, existing equipment was re-arranged to provide the primer coats. Then a new paint finishing plant was installed, at a cost of £120,000, to handle the output of the new Austin A40 sprayers, is capable of finishing 1,600 bodies a week. It is entirely British and the most advanced plant of its type in any automobile factory in the world, being the first ever to use the special rotary cradle system.

The results have been so satisfactory that it now ranks as a pilot plant for a much larger installation now being designed to meet the world-wide demand for Austin cars. The plant was built by the Carrier Engineering Company, Ltd., the originators of the rotary spray principle.

At the Longbridge Works the Austin Company used 340 mill. cu.ft. of gas in 1947 for purposes ranging from cooking to the high temperatures work in heat treatment furnaces. There are five main gas consuming groups—paint finishing shop; gear box factory heat treatment shop; axle factory heat treatment shop; forging factory heat treatment shop; and tool room heat treatment





A general view of the main colour spray booth in the Austin Motor Works paint spraying and drying installation is shown on the left. The paint feed-in pipes are above the continuous high intensity light panels. Beneath the floor grid is a water treatment unit which absorbs the excess paint spray. The picture on the right shows a body, with the two colour coats, about to enter the gas heated drying oven. The panel on the left of the body is the sliding roof.

body as it came off the body assembling lines. Austin bodies had previously been finished in cellulose paint with final polishing by power mops, but the new plant permits of the use of a synthetic paint giving a lustrous and durable finish without any subsequent polishing. The best and most even application of paint to the body is facilitated by a new method of conveying it through the various processes. Suspended from an overhead conveyor travelling at 7 ft. per min., are special cradles carrying the bodies. These cradles, which are counterbalanced, permit the body to be rotated by the sprayer so that he can apply the paint at the best working position and can also reach otherwise inaccessible surfaces. The final coats are sprayed in a tunnel 130 ft. long, with shadowless lighting of high intensity given by four continuous rows of fluorescent tubing.

As there is no final polishing, a high standard of cleanliness in the tunnel is essential, and this is achieved by introducing air which has been filtered, heated to 80° F., and with 65% relative humidity, at the rate of 140,000 cu.ft. per min. After spraying, the conveyor carries the bodies through a final drying gas oven 400 ft. long. This oven has four heating zones, each with an indirect gas-fired air heater, and is operated at a temperature of 260° F., the drying time having been reduced to under one hour. These zones can be separately controlled so that variations in temperature cycle can be made if required.

The drying oven consumes approximately 5,600 cu.ft. (25 therms) of gas per hour; the gas pressure being controlled at 2 in. water gauge. Thermostatic temperature control and electronic flame failure equipment are incorporated and valves are fitted to shut off the gas supply in the event of failure of the air circulating or extraction fans.

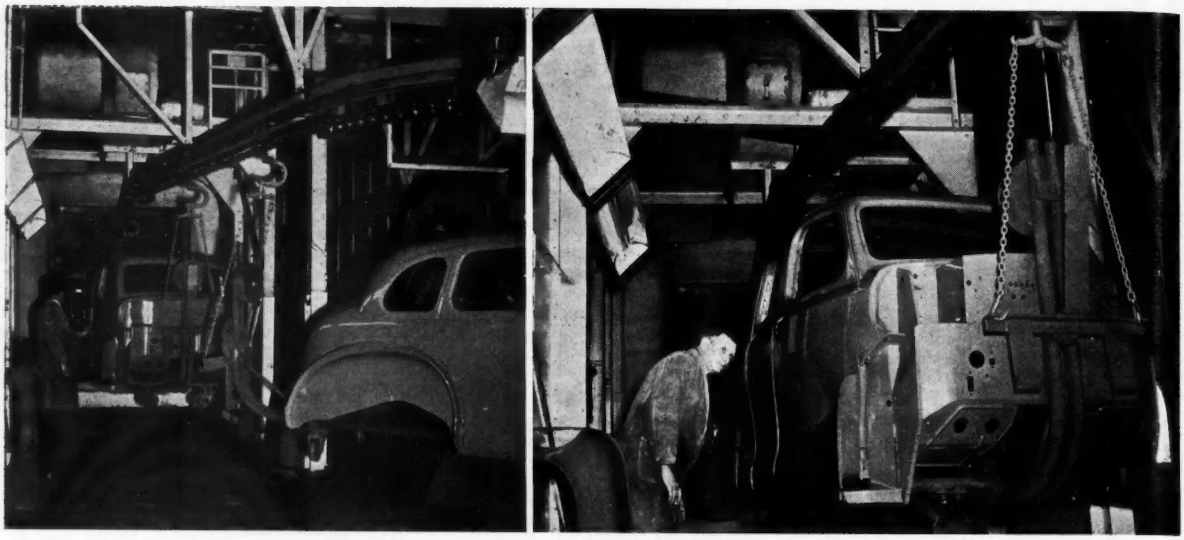
A centralized paint-mixing unit keeps the paint consistent in quality and temperature and feeds it in six different colours, through copper pipes direct to the sprayers.

Working two shifts this new painting plant, manned by seven shop. Originally all heat treatment was dealt with in a central heat treatment department. It is now the policy to locate the heat treatment of a component in the production line, and as a result, the gear box factory and the axle factory have their own hardening shops. Gas carburizing in electrically-heated furnaces is employed in both shops, town gas being used to provide a protective atmosphere during the cooling cycle of the carburizing process. Apart from one furnace in the axle factory, all the secondary heat treatment is carried out in gas-fired furnaces. The gear box heat treatment shop is equipped with eight cyanide salt baths with preheated chambers. The pots range in sizes from 15 in. diameter and 36 in. deep to 11 in. diameter and 30 in. deep. For those parts where local hardening is required, the carburized case is machined off and the heat treatment is carried out in double chamber low pressure gas-fired furnaces. In the axle factory heat treatment shop a gas-fired rotary furnace deals with differential gear components, and other items are handled by two 4 ft. by 3 ft. by 1 ft. 6 in. open hearth gas-fired furnaces, and by two gas-fired cyanide salt baths.

An Example of Co-operation

Prior to the tour of inspection the guests were entertained at lunch by the Company when a welcome was extended by the Chairman and Managing Director, Mr. **L. P. Lord.**

Mr. **J. R. W. Alexander,** General Manager, British Gas Council, responding, expressed appreciation of the Austin Motor Company's willing co-operation with the Council in enabling them to see the gas-operated motor body paint finishing plant—the latest example of Austin enterprise and efficiency. The life of the nation, continued Mr. Alexander, depended on the maintenance of exports in increasingly competitive markets. The need for export was no new thing, as so many appeared to think. In the past their economy depended upon exports, it did so even more to-day, and



On the left the bodies are seen leaving the finish colour coat baking gas oven prior to inspection and unloading. On the right a body is seen leaving the gas drying oven after its two coats of final colour paint. The reflection in the door panels indicates the quality achieved.

there was no reason to believe that in the future it would cease to be the principal factor in their industrial prosperity. Austins had, from the outset, played an outstanding part in the intensified drive for more and yet more exports. Moreover, they were sending abroad vehicles which maintained British standards of workmanship and at realistic prices. It was fortunate that Austins were led by such a forthright, determined, and able industrialist as Mr. Lord—a worthy successor to that great pioneer, Lord Austin. It was inevitable, having regard to its indigenous nature, that gas should be regarded as of interest only to the home market. In fact, if one thought about it, it became clear that gas played an increasingly important part in the life of them all. So much so that exports could not be maintained, much less extended, without it. The coal of the country would be conserved, production costs would be reduced, and better products would result from using more coal in its refined and most adaptable and efficient form—namely, as gas. Already one-third of the total gas output of the country was used in over 4,000 industries and trades, the gas demands of which had increased by 70% during the past 10 years. It would be even greater than that, but for the determination of the gas industry not to undertake loads which, owing to limitations of plant, coal, and materials, it could not meet with unfailing reliability. They were that day seeing another example of the application of gas—an installation which had proved so satisfactory that a larger plant was now being designed.

Mr. **A. W. Lee,** General Manager and Secretary, Birmingham Gas Department, also spoke, remarking that the Austin Company's products were famed throughout the world, and they of the Birmingham Gas Department felt a little proud that the Department had, in a measure, contributed to the success which had been obtained at Longbridge, inasmuch as they supplied vast quantities of town gas for processing various parts of motor vehicles. The association between the Department and the Company had existed practically since the works at Longbridge were established, and in times of both peace and war there had been the closest co-operation between the Company and the Department where the utilization of gas had been concerned. To-day, the Austin Company was the Birmingham Gas Undertaking's largest consumer, taking an annual consumption of over 400 mill. cu.ft. of gas, which was used in the various sections of the factories for purposes ranging from cooking to the production of high temperatures in large heat treatment furnaces. The consumption of gas he had mentioned was not the only gas used in connexion with the production of Austin vehicles. The Company could not make all their own components, and if account was taken of the gas used in this respect by sub-contracting firms—many of whom were situated within the Birmingham Gas Department's area of supply—the total consumption was equal in itself to the production of a medium sized gas-works.

Surrounding the Austin Works were large housing estates, so that in addition to the supply of gas to the works, a supply had also to be given to the domestic properties. Although the annual consumption of the Company was large, the peak load domestic consumption was still much greater than that of the works. The peak load occurred on Sunday at mid-day, and it had been necessary to install a high pressure holder in order to deal with this high short period demand.

Continuing, Mr. Lee said that consumption of gas in the huge factory at Longbridge had been steadily increasing year by year. In many ways it had replaced other forms of heating because of its adaptability, cleanliness, constant pressure, and price. Notwithstanding the increase of 1d. per therm which took place from March 15 last (the first increase for three years and three months), the price of gas in the Birmingham area of supply for both domestic and manufacturing purposes was among the cheapest in the country to-day. Consumers who, like the Austin Company, took 400 mill. cu.ft. per annum got the whole of their supply at an average of less than 7½d. per therm net. In the current year the Department would carbonize some 1,200,000 tons of coal, and if that tonnage had borne an average increase of 3s. per ton, it would have cost the Department an extra £180,000 in a full year. After negotiations with the Coal Board, the extra cost would amount to some £130,000, but their financial position was such that they could bear this additional burden in the current financial year without increasing the price of gas to their consumers, and still have a surplus available to pass over to the new owners on vesting date. Notwithstanding the fact that coal had advanced by about 130% above pre-war prices, oil from 200% to 300%, plant over 200%, and materials generally well over 100%, the percentage increase in their scale of prices according to the quantity taken, as compared with pre-war figures, ranged between 43% and 71%.

At the moment, the technical officers of the industrial section of the Department were carrying out a survey at Longbridge with a view to making recommendations which would improve the efficiency of the gas-fired plant. The Department made no charge for this class of work. It was part of their routine service and was given to any manufacturer, large or small, within their limits of supply. In the year ended Mar. 31 last, the total output of the Department approximated 23,000 mill. cu.ft. Of this quantity, 7,665 mill. cu.ft., or 34.58%, was used in manufacture. The facilities afforded by the industrial section of the Undertaking had produced from manufacturers in their area an additional potential load averaging over 1,000 mill. cu.ft. during each of the past four years. Actually, in the first six months of the present year the potential had approached 800,000,000 cu.ft. and it was, therefore, likely that the additional potential this year would far exceed its predecessors. They were not taking on loads which they could not meet, and although they were short of coal carbonizing plant at the gas-works, they had, in order to meet the position and fill the gap until they could bring plant extensions into operation, put down four large producer plants at the gas-works, with the object of making high-grade gas from the coal carbonizing plants of some 490 C.V. and diluting it with producer gas and distributing at the standard C.V. of 450 B.T.Us. By this means they would make an additional 70 mill. cu.ft. per week, and he was more than hopeful that they would meet all demands that would be made upon them by weather conditions and manufacturers during the coming winter.

Under nationalization, concluded Mr. Lee, the new owners would have in the Birmingham Gas Department one of the most efficient and financially sound undertakings in the country, which would obviously be the backbone of the West Midlands Region.

AMERICAN SERVICE CHARGES

The New York Public Service Commission has ruled that public utility companies in New York State may not charge customers for special services, such as repairs or adjustments to appliances, without first filing with the Commission a list of charges for such services, the American *Gas Age* reports.

Until recently many companies have fixed gas burners, replaced minor parts and adjusted gas and electric refrigerators without charge to the consumer. Recently, however, they have started making a charge to obtain " much-needed revenue." A statement by the Chairman of the Commission, Mr. Milo R. Malthie, says that charging for such services without listing the fees in the tariff normally deposited with the Commission would give the companies in question an unregulated source of income.

PUBLIC LIGHTING ENGINEERS

The annual conference of the Association of Public Lighting Engineers will be held at Eastbourne from Sept. 13 to 17, under the presidency of Mr. N. Boydell, Manager of the South-Eastern Sub-Area (East Sussex and West Kent), South-Eastern Electricity Board. Headquarters for the week will be at the Grand Hotel, and the meetings will be held at the Winter Garden, Devonshire Park.

Councillor R. E. Richards, Mayor of Eastbourne, will officially open the conference on the Monday afternoon, and will afterwards open an exhibition of street lighting apparatus and equipment, in which many of the leading manufacturers are participating, in the same building. The Mayor and Mayoress will hold a reception and dance in the evening.

Mr. Boydell will deliver his Presidential Address on the Tuesday morning; the Conference Luncheon will be held at the Grand Hotel on the Wednesday, the President's reception and dance on the Thursday evening, and a coach tour on the Friday. There will be five conference sessions during the week, and the papers to be presented include one on " Basic Principles in the Design of a Street Lighting Installation and their Practical Application," by D. M. Thompson, Distribution Superintendent of the Wigan Gas Department, and one on " Safety First on the Highways, with Special Reference to Street Lighting," by C. N. Melton, Street Lighting Inspector, Dagenham.

EIRE GAS WORKERS' WAGES

The Eire Labour Court has issued its recommendations in the disputes between employees of the Cork Gas Consumers' Company and the Cobh Gas Company and the respective companies.

For the Cork gas workers, it recommends an increase of 7s. 6d. a week on existing rates of pay, but makes no recommendations on demands for a reduction in the working week for shift workers, a night allowance, and pay at an increased rate for work on Bank Holidays.

For the Cobh workers, the Court recommends that rates of pay for workers other than fitters' apprentices should be increased by 5s. 6d. a week and by 3s. a week in the case of fitter's apprentices.

The Court has also issued its recommendations in the dispute between Dundalk Gas Company and its employees. The Court recommends that rates of pay should be: Stokers, £6 2s. 6d.; assistant stokers, £5 12s. 6d.; labourers, £4 16s. a week. No recommendation is made on the demand for a change in working hours or in payment for Sundays and holidays.

INCREASED EXPORTS

Gas industry by-products are playing a considerable part in the chemical export trade. This is shown in the June " Trade and Navigation Returns " published by H.M. Stationery Office at 4s. 6d. Total exports of chemicals and allied products during the first half of 1948 were valued at £40,105,594, compared with £11 mill. in the corresponding period of 1938 and £31 mill. in the same period last year. Coal tar dyes alone were exported to a value of £3 mill.—over six times as much as in 1938.

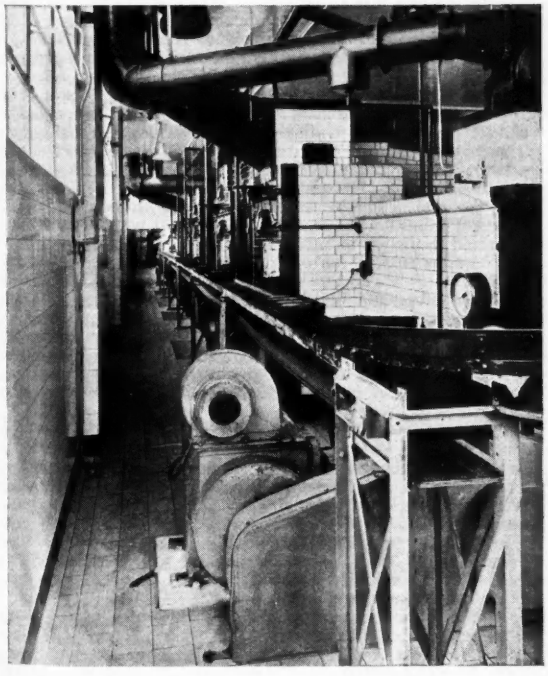
Machinery exports included 3,494 tons of air and gas compressors (1938 corresponding figure, 1,820); 3,989 tons of general chemical and gas plant (2,084) and 3,321 tons of centrifugal drying plant (476).

India was the largest buyer of British chemical goods, having spent £3,512,000; Australia comes second with £2,444,000. The U.S.A. spent £1,530,000 on British chemical goods.

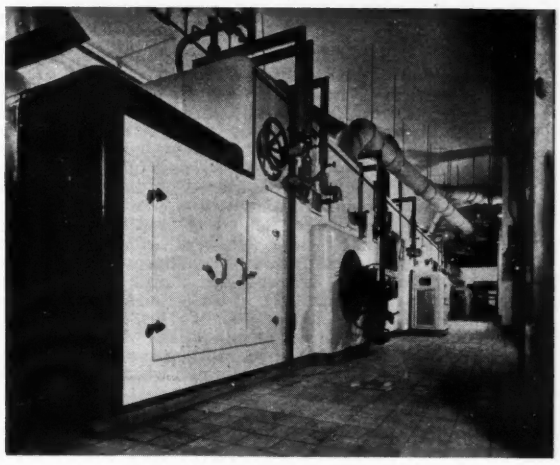
The figures show a general improvement in chemical exports and tell, statistically, the story of a too little-known contribution to British solvency.

BRITAIN'S LARGEST BAKERY UNIT

The largest single bread bakery in the British Isles, the Wonder Bakery, is within the area of supply of the Tottenham and District Gas Company and consumes over 2 mill. cu.ft. of gas per week. The five gas-fired travelling plate ovens, manufactured by Baker Perkins, Ltd., are each 60 ft. in length and 6 ft. wide. The first three ovens to be installed are brick-built, faced with glazed tiles, and are fitted with five gas burners, each controlled by its own Bristol temperature indicator and controller. The maximum gas rate of each oven is about 4,000 cu.ft. per hour and the minimum—when all burners are in the shut down position—about 1,000 cu.ft. per hour. Heat is transferred from the combustion chamber to the baking chamber by the steam tube principle. The fourth oven is similar, but a sheet steel casing, suitably insulated, is substituted for brick.



One of the original brick-built ovens, showing the various burner sections



The new steel-walled No. 5 oven

The fifth oven, while of the same size and capacity, is of the " Cyclotherm " type. Air for combustion is induced to each of the two burners by its own motor-driven fan. The flame burns in a refractory brick-lined combustion chamber and the hot products are drawn into steel flow ducts from which they are distributed through steel tubes in the baking chamber and from which they give up heat to the bread. Return ducts collect the gases, some of which are re-circulated through the system after admixture with fresh products, and the rest are expelled through the flue. The flow of hot gases can be regulated independently to produce any desired temperature gradient along the length of the oven.

A full account of the Wonder Bakery, which bakes 7,000 loaves per hour, its history, bread-baking processes, and gas installations —including comparisons between the ovens mentioned—is published in the August issue of " GAS SERVICE."

BRITISH GAS-MAKING COALS*

By J. G. KING, O.B.E., D.Sc., Ph.D., A.R.T.C., F.R.I.C.,
Director, The Gas Research Board

(*Continued from p. 270*)

AN account of the supply of gas coals would not be complete without dealing briefly with the demand for coking coals, since in some areas the same seams supply both industries. The coke industry in 1945 carbonized 20.3 mill. tons of coal, *i.e.*, an identical amount to the gas industry. The 9.4 mill. tons from Durham and South Wales was largely true coking coal—*viz.*, 301 and 401a (Durham)—but much of the remainder (10.9 mill. tons) can only have been coals defined in this paper as gas coals, and this complicates the question of supply. The following table gives enough details of the 1945 quantities of coal to illustrate the point.

From	Coking coals supplied 1945 (mill. tons)	Coking coal types in planned annual output 1942-52 (mill. tons)		
		301	401	501 half
Durham	7.1	5.0	16.7	3.7
Yorkshire	6.9	—	0.6	4.8
Derbyshire	1.7	—	—	—
Lancashire, Cheshire, North Wales	0.4	—	0.4	0.9
Staffordshire	0.5	—	0.2	0.2
South Wales, Monmouth...	2.3	9.8	4.4	0.3
Scotland	1.2	—	—	—
Others	0.2	1.1	1.8	0.7
Totals	20.3	15.9	24.1	10.6

It is apparent from this table that Durham will come to depend upon the coal of type midway between coking and gas coal. In Yorkshire the position is quite different; the coke industry there has no planned reserves which are not also good gas coal, and draws upon the type 501, 502 and 601 coals of Yorkshire (6.9 mill. tons) and Derbyshire (1.7). It may be that in due course the National Coal Board will supplement the natural separation (by size) of coking and gas coals.

The Availability of Gas-Making Coals

From the foregoing review it is possible to make a general assessment of the production and consumption of gas-making coal in Great Britain.

(1) Scotland is not self-contained regarding gas-making coals, drawing already 5% of its gas coal from Northumberland. Since the caking coals of the central Scottish field are also failing, it would seem that N.C.B. Division 1 (Scottish) will require to " import " still more from Division 2 (Northumberland, Durham, and Cumberland). If the full 3 mill. tons are raised in Scotland during the next decade (Table 1), this could provide 2.0 mill. tons in grade form for continuous vertical retorts, and 0.3 mill. tons of smalls for static retorts. What deductions would have to be made from these quantities for coal of unduly high ash content cannot be stated in the absence of direct evidence, but the 7:1 ratio would probably remain. It is interesting to speculate upon the effect of " importing " soft Durham coal as a blending component for static charges, or clean Northumberland graded coal to enhance the use of continuous vertical retorts.

(2) N.C.B. Divisions 2, 3, and 5, which contain the coalfields of Northumberland, Cumberland, Durham, and Yorkshire, have some 27 to 30 mill. tons per year of " first-choice " gas coal which is surplus to their local requirements. This coal (excluding that of Cumberland) must be distributed to meet the requirements of other gas areas, of which those which include London are much the greatest.

(3) The East Midland Division 5 of the National Coal Board, which contains the coalfields of Nottinghamshire, Derbyshire, and Leicestershire, is also more than self-contained, and can contribute substantially to other divisions or gas areas.

(4) The requirements of the north-western gas area are not safely met at present by indigenous coal from the North-Western Division, which deals with the output of the coalfields of Lancashire, Cheshire, and North Wales. The position is capable of improvement, however, since the output is planned to yield more gas coal types in all three fields. Until then, it will no doubt draw upon N.C.B. Division 3 or 5.

(5) The West Midlands Division 6 is unable to provide gas coal from its coalfields to the West Midland gas area with which it approximately corresponds geographically. It will, therefore, continue to draw from N.C.B. Divisions 3 and 5.

(6) N.C.B. Division 7, which includes the large coalfield of South Wales and the smaller fields of Bristol and Somerset, is unable to maintain adequately the supplies of " first-choice " gas coal, and the position will not improve with time. The Bristol and Somerset field could help. although the output is small since these highly caking coals are very suitable for static carbonization. They are, however, of high ash and sulphur content and the building of a large coal-washing plant would first be necessary

(7) The Kent coalfield in N.C.B. Division 8 is situated very favourably for the London market, but only part of its output is caking coal, and only part of this is sufficiently high in volatile matter for gas manufacture. The increased application of the coke oven to gas manufacture suggests the fuller exploration for this purpose of all the coking coal at the highest levels of volatile matter.

Observations of this kind are at present possible only in a limited sense, but they do indicate the possibility of the eventual achievement of a recognized plan for the distribution of coal to the gas industry; a plan which would take account of coal quality as measured by the industry, and balance this against considerations of transport and cost. Such a plan should also have an important directive bearing upon the type of gas-making plant laid down in new construction programmes, and should be brought forward now.

The plan could be supplemented by making available to the consumer a knowledge of the quantities and the essential properties (caking power, ash, &c.) of the commercial grades of coal available in every coalfield. It seems very clear that the National Coal Board will find this possible from the card-index data emerging from extensions of the Rapid Survey.

Considerations of transport raise the recurrent question of gasification of coal at the pit-head. The question involves too many variables to be discussed adequately here, but reference may be made to the researches of the Gas Research Board on the complete gasification of bituminous coal. As visualized at present, a process based on this work would not require coal of the high-volatile caking type defined as " gas-making " but would gasify weakly caking coals of the house-coal type, or steam-coal of both high and low volatile matter; nor would this coal necessarily be of low ash content, or graded in definite sizes. Were such a process to become applicable, and were it to be applied to take part of the gas load, it could alter the picture by bringing within the definition of gas-making coals comparatively large reserves of types not now included. The proximity of the Kent coalfield to the London area of high gas consumption, the inadequate supplies of gas coal in Scotland and South Wales, are all cases for thought. The experimental work is not, however, sufficiently far advanced to have other than a speculative bearing at the present time upon the consideration of future supplies of coal for existing processes of gas manufacture.

Conclusions

The planned output of coal in Great Britain contains a proportion of high-quality gas coal which is greatly in excess of the present rate of consumption in the gas industry. It also indicates that this proportion is not likely to alter appreciably during a period of about 100 years. This continuity of supply of types of coal suitable for existing processes provides a background of security for a programme of reconstruction and extension of existing plant.

Since the centres of production of coal and gas are not coincident, the distribution of gas coal is an important factor and would seem to call for joint planning with the erection of new gas-making plant; it is suggested that the evolution by the gas industry of a quality structure for gas coal would help. This coal is also suitable for other industries, however, and the real questions are (i) What proportion of the coal is suitable for gas making, with regard to size and ash content ? and (ii) What proportion of that which is suitable can be allocated to the gas industry as and when it expands to absorb it ?

The requirements of the coking industry are met by other types of coal, except in Yorkshire, where it is suggested that further sub-division of certain types of coal, by volatile matter as well as size grading, be made of the caking coals of Yorkshire and Derbyshire.

Attention is directed to the value of the caking coals of Northumberland (south) particularly as clean graded coal, and to the possibility of greater utilization of the more " high-volatile " of the Kent coking coals, for static carbonization in the North Thames and South Eastern gas areas.

While it is true that the method of complete gasification of coal under experiment would treat types of coal outside the range now discussed, and therefore enlarge the reserves of suitable coal and reduce transport difficulties, the development of a process is not sufficiently advanced to affect the present evaluation of the position of supplies of gas coal.

The National Coal Board is collating essential data regarding all coals and grades, and is standardizing the latter. The final result should, in time, realize the efficient allocation of all coal.

DISCUSSION

Dr. H. Hollings (Gas Light and Coke Company): About 18 months ago the Gas Research Board Council decided upon an expansion of the general research programme, and a few of us spent some time

* Abstract of Communication No. 334 presented to the Annual Meeting of the Institution of Gas Engineers, June 1948

together considering what we should undertake. We took the view that, having regard to the general shortage of scientific manpower, we should take care not to overlap in any field that was being adequately covered by other workers. We asked ourselves what could we do better than anyone else could do, and I think that the first project which emerged from that searching test was this, that we should take the results of the Coal Survey and interpret them to the gas industry, a task which, so far as we know, had not been undertaken before.

Fortunately the Director himself had very special qualifications for undertaking this work, and you, Mr. President, were not slow to realize the part which this paper could play in building up the excellent programme which you have arranged for this meeting. I must say that I regarded your interest in the matter with mixed feelings. I was just a little jealous that you should be stealing such an excellent paper from the next meeting of the Gas Research Board, but, at the same time, I was very gratified that the work was proving to be of such interest to the industry.

Use of Local Coals

Mr. **C. H. Chester** (Swindon United Gas Company): This admirable paper comes at the opportune time when the gas industry, through the British Gas Council, is negotiating with the National Coal Board in an endeavour to classify and evaluate coals and to evolve therefrom a price structure covering all types of coal which are used to-day in the gas industry, and which types may be used in varying quantities as new works take shape under the nationalization of the gas industry. In fact, Dr. King brings out in his paper the fact that certain coals now named "first-choice" coals are liable to be available in reduced quantities in certain areas, but in increased quantities in other areas.

With all the fuel industries in the country nationalized, it should be possible for our industry to contribute to a well planned fuel economy and an increased saving by the installation of plant, whether for gas-making, or otherwise, which is designed and constructed for the most economical use of the nearest local coal, or having reference to the cost of transportation of such coal, and I am pleased to see that the distribution factor is discussed in terms of coal quality and the areas of coal production and the boundaries of the areas projected by the Gas Bill.

The alluring prospect of a new process to treat coals having a caking power below the normally accepted minimum would completely alter the economics of gas production in the heavy gas consuming areas of London and the South East, which to-day almost entirely depend upon "imported" coal; similarly in South Wales. Since, however, existing types of plant will not be altered in a major way for a considerable period of time, the paper rightly focusses the attention of gas executives on the desirability of installing plant to use local coals. If the output of coal is to be planned over the 100 years for varying types of coal, it is essential in my opinion for the gas industry to stake its claim for an increase in percentage of the better types of coal where gas consuming areas adjacent to the better coals arise, and in other areas where inferior "second" and even "third" choice gas coals exist. The latter may involve the complete destruction of the resultant cokes by methane synthesis or water gas production, and should not be allowed to spoil the coke market. To do this, however, gas production methods must also be planned. The gas industry should explore the possibilities with the National Coal Board of improving "second-choice," and possibly "third-choice," coal by treatment at the pithead.

Possibly the installation of large scale static carbonization instead of the increasing percentage of continuous vertical retorts would follow, but even to-day I am afraid such continuous vertical plants, desirable though they are in built-up and residential areas, are being installed without the certainty of a supply of the special coal they require.

A Word of Caution

The gas industry has for years been grumbling about increasing ash contents, which are bound to tend to rise by the increased use of mechanization in coal cutting, the lesser inclination to do the dirty and arduous job of coal picking at the pithead, and the use of water at the coal cutting face. I would, however, like to put in a word of caution to the almost universal pressure for increased coal washeries and cleaning plants. Too often do we see ash removed and another inert in the form of moisture installed in its stead, and, while it may be easier for the user to get rid of the moisture than a smaller percentage of ash, it is nevertheless true that the usuable content of the coal can be the same whether a coal be washed or unwashed. It costs money to treat coal and there is an inevitable loss in combustible material. I do suggest that in many cases carbonizing and burning plant could be properly designed in conjunction with a suitable price structure which in the national interest would give better fuel cost economy. I suggest, therefore, that consideration be given to this aspect, and maybe a report made upon the subject in consultation with the executives of the National Coal Board.

The paper deals mainly with the Rapid Survey which employs coke numbers involving coking power and volatile matter only. I am sure Dr. King will be the first to criticize the unedited use of the Rapid Survey in the determination of values and the usability of coal. Not only must ash and its varying fusibility be considered, but also the amount of sulphur.

This would rather indicate that coal types, which in many other respects are similar in different coalfields, should have letters, A, B, C, and so on, added to the numbers, indicating sulphur, as content, fusibility of ash, &c., in addition to the volatile and coking power.

The grading of coal now adopted as a first step towards standardization is a good start, and if to such grading could be added codes indicating valuation for coke manufacture as distinct from gas manufacture, and straight combustion, however long such coding may take we could then consider in each large fuel consuming industry concurrently with the planned production of coal, the type of gas, or other coal consuming plant, in the interests of national fuel economy. If we do not, certain coalfields are likely to fall into disuse, or to be an uneconomic drain on the rest of the industry because their coals are not used in plants properly designed for them.

For this and other reasons I have just given, I do suggest that Dr. King's paper is a necessary document in the hands of all regional gas boards, and under the co-ordinating National Board in the future development of the gas industry. As further information becomes available from a more detailed survey, I hope that it will be similarly recorded by the Institution for the benefit of the gas industry.

Output Planning

Mr. **S. E. Whitehead** (Southampton Gaslight and Coke Company): It is satisfying to know that an adequate supply of suitable gas coal is likely to be available to the gas industry for many years, but it must be borne in mind that the planned output has not yet been reached, nor have we any guarantee that it will be reached in the future. There is also the question of export, and I cannot find any mention in the paper of the quantities of first-class gas and coking coals which are likely to be exported in either period.

It would appear in fact that the period 1942 to 1952—the one on which we shall probably base our ideas—is a little out of date for two reasons. Firstly, six years of that period have passed and the output planned has not been achieved. Secondly, there are only four years of the period to go, but we know that it takes five years or more from the date of order to obtain new carbonizing plant. The author has, of course, been obliged to use the Survey figures which are available, but it might be worth while considering the replanning of the output on a later period, say 1948 to 1958.

The question of grading comes into prominence throughout the paper. Of the six types of gas coal specified three must be wholly or partly graded to make them "first-choice," and in the other three cases grading is stated to be advisable, particularly for use in continuous retorts. This appears considerably to reduce the availability of "first-choice" gas coals, for only a portion can be graded in practice. I am a little sceptical about the practicability of grading in some cases, for in the first place it entails additional cost, and secondly an outlet must be found for the discards. In the case of Durham coal, for instance, with which I am most familiar, grading is an expensive process owing to the friability of the coal, while the run-of-mine coal frequently contains 60 or 65% of fines.

A further limitation is caused by availability and transport costs; for instance, South Coast undertakings must for obvious reasons largely use seaborne Durham coal.

The author has dealt with the effects of this matter, and suggests that the factor of coal distribution should be related not only to the quality of the coal available, but also to its suitability for the plant installed. This is no doubt true with regard to existing plant, but I feel that, taking a long term view, there is more likelihood of plant in the future having to be selected to suit the type and grades of coal which are economically available.

Problem of Ash Content

Finally I should like to say a word on the question of ash. The Survey figures on which this paper is necessarily based classify the coals in relation to caking index and volatile content. The author stresses the importance of ash content. There is no doubt that this question of ash in coal should be tackled much more energetically. The author says that the "moisture content of coal is as much an impurity as ash". While this is true from the point of view of purchasing useless material and for other good reasons, I feel that ash is much the more serious problem. There is no need for me to detail all the losses in efficiency, labour, and transport, which arise from a high ash content or from a sudden variation in the same. I think we all feel, however, that the gas industry will be a two-fuel industry for a considerable time. The ash content of our coke has been appallingly high for some years and, if coke is to find a ready market, its quality must be improved in this respect.

I welcome the statement that more details should be available to the consumer; but in addition to the percentage of ash in the coal we badly need more information regarding its characteristics. It would be of enormous value to have details of the chemical composition and fusion point of ash in the principal gas coals, since the low fusibility of the ash frequently causes more trouble than its actual quantity. From the point of view of blending also, it must be remembered that the ash in one coal will frequently act as a flux to the ash in another, resulting in more trouble than would be experienced if each coal were used separately.

Most of my criticisms are directed more against the Survey than

against the paper, and I trust the author will not think them too destructive. I would repeat that, in my opinion, this paper is most valuable to the industry both now and in the future, and that we are under a great debt to Dr. King for the enormous amount of work entailed in its preparation.

Mr. **A. M. Wandless** (National Coal Board): A paper of this kind combining an expert appraisal of the types of coal required with a sound appreciation of the natural resources of the various coalfields is of particular value at a time when so much attention is focussed on coal supplies. It is only in this way that we can get down to the details of the utilization of our coal to the best advantage. Dr. King has made effective use of the Rapid Survey of Reserves carried out by the Coal Survey a few years ago; his paper brings to life the factual record of that work in Fuel Research Survey Paper No. 58 and justifies the hope expressed in the foreword of that publication by Sir Harold Hartley, then Chairman of the Fuel Research Board, that one of its uses would be to show the consumer where he could obtain the particular types of coal he requires.

That the problem of meeting the needs of the gas industry is a complicated one is clearly brought out by this paper. It is, in fact, considerably more complex than the paper indicates, as I am sure Dr. King will readily admit. The analysis of the situation in terms of reserves and of the projected outputs of our seams is a necessary foundation, but the findings must inevitably be qualified by considerations of actual availability, not only of the right type of coal, but in the right size; by transport problems; and by the necessity to balance the needs of the gas industry against those of other consumers who may require coal of the same type. The projected outputs quoted in the paper are based on a planning of production which is now considerably out of date.

First and Second Choice

It is with some trepidation that I venture to comment on Dr. King's selection of "first-choice" and "second-choice" types of coal for gas making. He has made use of the Coal Survey coding of coals, which combines swelling power, as measured by the Gray-King assay coke, with volatile matter, and which reflects the well-known coal band in a convenient way. The Scientific Department of the National Coal Board appreciates the value of this system of classification, which we have found to be serviceable. But we have come to recognize that in the high volatile coals the split on dry ash-free volatile matter at 37% is to some extent artificial. The effective range is about 35% to 43%, and therefore a subdivision at 37% is somewhat misleading. In point of fact, nearly all the coals in the types 501, 601, 701 contain more than 35% volatile matter, and we would not, on the score of volatile matter, exclude them from "first-choice." I believe that from the gas-making point of view we can legitimately ignore the third figure in the coding and consider, for example, 501 and 502 as one class, which we can call 500. In my view the nomination of types of coal as "first" and "second' choice, as put forward by Dr. King, is open to criticism in that it lays too much stress on a criterion of volatile matter we now consider to some extent artificial, and in that it ignores the important factor of the sizing of the coal. I should prefer to see a list of coals "suitable for gas-making" with no firm indication of first or second choice, somewhat on these lines:

Type 400.—"Through" coals and small graded sizes.

Type 500.—Mainly small graded sizes (doubles and singles).

Type 600.—Small graded sizes.

To these I would add, as a second choice, type 700 in graded sizes only, remembering, as Dr. King points out, that owing to the accident of geography it will be necessary to use these comparatively weakly caking coals for gas making in some areas, for example, Scotland and the Southern Midlands.

If Dr. King will accept these suggestions as to suitable types, we can, by making certain assumptions about the normal size distribution of coals, arrive at a very rough estimate of availability, using an analysis we have recently made of the 1946 output in terms of coal types.

1946 *Coal Output*

Coal type ...	100	201-2	203-4	301	400	500
	Anthracite	Dry steams	Coking steams	Coking coals	Very strongly swelling coals	Strongly swelling
Mill. tons ...	3.6	6.3	5.9	14.9	12.9	29.6
%	1.9	3.3	3.1	7.8	6.8	15.5
Coal type ...	600	700	800	900		
	Medium swelling coals	Weakly caking coals	Very weakly caking coals	Non-caking coals	Unclassified and special types	Total
Mill. tons ...	27.5	29.0	32.8	20.9	7.3	190.7
%	14.4	15.2	17.2	11.0	3.8	100.0

The coals in which we are primarily interested are the 400, 500, and 600 types, which together amounted in 1946 to 70 mill. tons, or 36.7% of the total output for that year. The greater part of this tonnage, however, is not produced in a suitable size for gas-making. If we assume that 50% of the 400 is made as "through" and small graded sizes, and 25% each of type 500 and 600 as small graded sizes, we get the following picture of availability:

		Available for gas-making Mill. tons
Type 400.	"Through" coals and small graded	6.4
Type 500.	Small graded...	7.4
Type 600.	Small graded...	6.9
		20.7

To this tonnage may be added the small graded sizes produced from the more strongly caking half of type 700, say 25% of 50% of 29 mill. tons, a matter of 3.6 mill. tons, making 24.3 mill. tons in all.

The requirements of the gas industry are at present approximately 18 mill. tons, and when it is remembered that the coking industry is also drawing to a considerable extent on the type 400 "through" coals and to a lesser extent on small graded sizes of types 500 and 600, and that consideration both of quality (ash and sulphur content) and transport will rule out some of the coal available, it will be recognized that, far from having a large surplus of suitable coals for gas-making, we are likely to have a deficit in a poor year for production, such as 1946. This situation can be met in two ways: on our side by supplying larger coal for breaking to graded sizes, which is not always possible owing to the needs of export and home consumers; on the gas industry's side by extending the range of suitable coals to include the low volatile coals of South Wales, and the non-caking coals of the Midlands. In this connexion the work of the Gas Research Board in exploring thoroughly the various systems of complete gasification is clearly of the greatest importance.

An Optimistic Outlook

Dr. **A. Parker** (Director of Fuel Research): Before this first appraisal of results was obtained, from geological evidence we knew that we had enough coal in this country, using it at the rate of 250 mill. tons. a year, to last for about 600 years; but it is obvious that a lot of that coal could not be worked economically. Therefore, one felt it was important to collect all information possible on the coal seams and on the quality and types of coal, and put them in a quantitative form.

Much information has gone over to the National Coal Board with the Coal Survey. In that information there are figures for sulphur, ash, and other constituents which may not seem to be of importance to the gas industry, but which are of importance to other industries. Those particulars were given to assist in a Hollerith system of classification so that by turning a handle you can get information on different coals of different types, and no doubt that information will come along.

With regard to the selection of gas-making coals, I should have been inclined to be more optimistic about the total quantity of gas-making coals. I was a little disturbed when I heard Mr. Wandless put forward what I consider to be a very pessimistic picture. It sounded as though we have not enough gas-making coals to supply the gas and coke-making industry at the present time. I believe that the coal carbonizing industries can find sufficient coal—assuming they are bringing it out of the ground—to have a 50% expansion in the next 20 to 30 years without any serious difficulty in coal allocation, providing coals for other purposes are properly allocated. I have faith in the possibility of complete gasification in some directions, but for the next 20 years I have much more faith in the gas industry as a two-fuel industry, and to make it such it is important for coke production to be of good quality, grade, and size. For that you require a much lower ash content than that prevailing in some areas.

There is work for the National Coal Board. Moisture means paying for something which is not fuel when it is bought, but moisture does disappear, and is one-way traffic. Ash is not one-way traffic; it is two-way traffic and has to be got rid of. I know that the National Coal Board have a difficult task, but I believe they are working hard in the right direction, and some people are more impatient than they would be if they knew of the difficulties of the Coal Board.

In spite of everything that has been said so far, I should like to emphasize that I believe, with proper allocation of coals in the future by the coal industry, there will be enough coal to enable an expansion of the carbonizing industries taken together by 50% with no serious difficulty.

Moisture Content

Colonel **F. J. Bywater** (South Metropolitan Gas Company): My fairly wide experience of coal leads me generally to agree with what Dr. King has said, and although he has warned us that his information is based on a Rapid Survey, it will probably be more complete in time, but will still justify all that he asks us now to accept. Dr. King referred to the considerable quantity of gas coal which is available in Northumberland, but those who have to make gas of higher calorific value than 400-450 B.Th.U. should buy their coal within a few miles north of the Tyne. Those engineers who are looking for these high volatile coals will also probably forgive me for reminding them that Dr. King's analyses are all taken on dry ash-free coal, and there will be adjustments to be made for moisture and ash. The question of moisture has been discussed by Mr. Whitehead and Dr. Parker. It is a very difficult one, but as it seems to be generally understood that the long term policy of the Coal Board is to wet wash coal, I would issue a word of warning. If we are to get

a very large increase in the moisture content of our coal it will be a very serious thing, because it seems to be understood that in future the tolerance in weight allowed by merchants will not operate, and colliery weights will have to be taken. Large quantities of moisture in the coal will inevitably lead to difficulties with regard to short weight. That will not be the only difficulty. It seems to be generally understood that moisture is to be preferred to ash and, speaking as a gas engineer, I would not quarrel with that choice; but I would emphasize that when it comes to the *valuation* of the coal, moisture is far more deleterious than ash. Moisture is a very serious problem, and a most careful watch should be exercised in connexion with the wet washing of coal.

I would also suggest to the author that 1945 is not a very good year in which to judge the flow of coal deliveries. We who had to represent the gas industry on the Public Utilities Coal Committee know that large quantities of good gas coal were taken from us for war industries, and we had to make up this loss from house coal and other types. In that connexion I should like to pay my tribute to Dr. Parker and Dr. King, who gave us every possible assistance in trying to find suitable coals to replace those which had been taken from us.

It appears that all the very valuable technical information which is the basis of Dr. King's paper has now been handed over to the National Coal Board. There can be no objection to this but, as the gas industry is to be nationalized, I think that information—and it is extremely valuable information—should be available to the new gas industry, and that we should claim to have access to it. I would also venture to suggest that at the new Gas Council's headquarters there should be a high-ranking officer who will be able to follow up this paper and deal with it adequately; that in each area there should be a first-class officer who will deal with coal supplies, keep the industry's representative on the Consumers' Council posted as to what is going on, and supplement the knowledge of the engineer by assisting him to get the coal he wants.

My Company has for many years taken a great interest in this question of coal control. We sample all our coal at the point of loading, and by the time the ship arrives in London, there is a telegram on the engineer's desk giving an approximate analysis of the coal. We have also our own assay plant which gives working-scale results, and every three months a survey is sent to the management. The scheme is not expensive and the results have been entirely satisfactory.

Continuity of Quality

Mr. **G. C. Pearson** (Birmingham Gas Department): I wish to stress the importance in carbonization of the continuity of quality. It is not possible for big buyers of coal to obtain coals of similar quality. You often have to buy coals of very divergent qualities, and where work is being done with easily working coals and a changeover is made to, say, rigid South Yorkshire coals, it causes confusion. I do not agree with Mr. Chester that coals are difficult to work in the vertical retort. I think it is the changes in quality which are difficult. Dr. King's survey should help very materially in this respect, and if the National Coal Board would place coal in quality boxes, that should be of still greater help to the coal buyer. We are a bit suspicious of these quality boxes but, at the same time, it is a big advance in the technique of coal buying to have coal of similar quality in order of quality.

Blending

Mr. **J. Carr,** M.B.E. (Bristol Gas Company): Dr. King has presented an excellent summary of the properties and quantities likely to be available of British gas coals. He also gives a very useful guide to the various types of coal suitable for the gas industry, particularly as viewed from the standpoint of their use in existing standard plant —that is, static or continuous carbonization. With the various types of coal, their properties, and suitability, as set out in the paper, there will, no doubt, be general agreement, although it would have been helpful if more precise information had been given on the important matter of coal blending. It is pointed out that " blend constituents must have the same size grading " but no actual size is mentioned. This is important, because in the past there has been much loose talk concerning blending, and that term has been used frequently when only " mixing " was intended. What is the maximum particle size suitable for blending and would not the installation of suitable plant be a costly proposition at the present time? It is pleasing to note that some attempt is being made to standardize the grading of coal into sizes, so that, in the future, the name of a grade may have some definite meaning.

As Dr. King points out " the collected survey data now form an almost complete picture of the properties of the coals in all the main seams," and throughout the paper numerous references are made to the ash content of coal and to the necessity for reducing it to a minimum. This, of course, is a matter of great urgency, and we are told that steps are being or will be taken commensurate with its importance; but for those who are responsible for the daily production of gas, at as high a level of efficiency as possible, it is difficult to escape the short-term view—namely, that while improvement should be striven for, why cannot the various coals be supplied at least as clean as before the war? Naturally the paper does not set out to answer that question, but it certainly provokes it.

Being situated in the South-West, I am interested in the Somerset and South Wales coalfields, that is, National Coal Board Division 7, although a considerable proportion of our coal has to be drawn from other parts of the country. In that connexion it would appear that technical considerations have had to be subordinated to other aspects of the problem because, prior to the war, large amounts of Durham coal were transported relatively cheaply by sea, to Bristol, but since the war much smaller amounts have made the long journey by rail at, of course, a mugh higher transport cost.

Turning to the Somerset field, it is agreed, as Dr. King states, that " it would be most desirable to increase the coal washing plant in the field and provide reasonably clean coal for the carbonizing industry," but, in the meantime, the gas industry is entitled to expect coal at least as clean as that provided pre-war, and which it was able to use, in spite of the various natural disadvantages associated with the Somerset field, and it is not getting it.

This is shown by the following figures which deal with the testing of 18,706 samples of 14 different coals from the Somerset field, and during the period 1927-1937 the average ash content was 10.5% while during the period 1939-47 it averaged 12.5%. This rise is bad in itself, but a far worse feature is the violent fluctuations in ash content, which are so disturbing to efficient working. Thus the maximum ash content for the 14 different coals during the two periods are as follows:

Coal	Period 1927-1937 Maximum ash, %	Period 1939-1947 Maximum ash, %
A	18.5	20.4
B	18.5	21.3
C	16.5	30.4
D	15.5	30.0
E	14.5	17.5
F	17.5	19.0
G	17.0	28.0
H	19.3	25.4
J	18.5	24.3
K	20.5	29.2
L	18.5	22.5
M	18.0	28.7
N	15.0	15.4
O	13.6	18.6

This dirty coal, apart from burdening the country's transport is having a very bad effect on the coke market, because the present prices are nonsensical for a fuel which frequently contains more than 40% of inert matter. Also, one must not look to the introduction of coal-washing plants, even when they become available, as a cure-all, because only recently, when complaining of the presence of rock which was damaging our coal breakers in a certain coal, we were offered a washed coal in its place at an increased charge of 2s. 2d. per ton. Such an offer only masked the real state of affairs, because the reduction in ash was balanced by an increase in moisture, so that the 2s. 2d. was wasted, while the real solution was one of labour supervision at the picking belts where the rock should have been removed.

Finally, it is submitted that it will not help the industry to concentrate on the scientific choice of coals if such considerations are then to be subordinated to questions of transport, labour, availability of materials, and the like. Therefore, to take a realistic view the two aspects of the question must be considered together; otherwise one merely obtains a picture of what may happen in the rather distant future.

HOME SERVICE IN YORKSHIRE

At a meeting of Home Service Advisers of the Yorkshire (West Riding) District, attended by Mrs. E. Murphy (Home Service Officer, British Gas Council), held in Leeds recently it was decided to form a Home Service Advisers' Discussion Group for the Yorkshire (West Riding) District, and to hold meetings bi-monthly.

Mr. H. Singleton (Chairman, Domestic Development Committee, Yorkshire (West Riding) District) occupied the chair, and welcomed Mrs. Murphy, who spoke of the great value of these Home Service Advisers' Discussion Groups, and said that such Groups had already been formed in the London, South-Western, North-Western, and Midland Districts. She thought such Groups should be informal with a view to encouraging free discussion on the various matters which arose from time to time within the Home Service Advisers' sphere of activities, and to provide an opportunity of exchanging ideas and information. Every encouragement would be given from London to assist district organizations, and it was gratifying to report that 120 undertakings now employed demonstrators. Mrs. Murphy stressed the need for personal contact with domestic consumers, and thought that such contacts should be maintained when families moved from temporary to permanent houses. Close liaison with the Gas Salesmen's Circle would be beneficial, and welcomed, and Mr. E. S. Cater (Chairman, Yorkshire (West Riding) District Gas Salesmen's Circle) supported Mrs. Murphy on this point.

At the first meeting of Home Service Advisers of the Yorkshire (West Riding) District held in Leeds last month the following officers were elected:

Chairman: Mrs. D. M. Turner (Rotherman Corporation Gas Department.)

Deputy-Chairman: Miss D. M. Mungovin (Pudsey Coal Gas Company, West Riding Group of Gas Companies).

Hon.Secretary: Mrs. M. L. Brown (Leeds Corporation Gas Department)

The next meeting will be held in Leeds on Sept. 3, at 2.30 p.m.

COMPANY MEETING

MALTA AND MEDITERRANEAN GAS COMPANY

THE Annual General Meeting of the Malta and Mediterranean Gas Company, Ltd., was held at the offices, 5, Great Winchester Street, Old Broad Street, London, E.C.2, on 30th July, 1948. Mr. Arthur M. Paddon, M.I.C.E., Chairman of the Company, presided.

The CHAIRMAN declared that a quorum of stockholders was present.

The MANAGING DIRECTOR and SECRETARY (Mr. G. Murray Burton, M.A., F.C.A.) read the notice convening the meeting and the report of the Auditor.

The CHAIRMAN said: You have had an opportunity of perusing the report and accounts, and the report itself is of a purely formal character, so I think we might consider briefly the accounts themselves. If you look on the debit side of the first account you will see that the expenses of the manufacture and distribution of gas have been increased by just over £3,000, but inasmuch as the output of gas has been increased by 17.6% the increase is more than accounted for. The increases in the first three items on the debit side are entirely attributable to the increase in the quantity of gas produced and distributed. There is only one item on that side of the account that is less, and that is the expenditure on maintenance and renewals of works and plant. In that item there is a considerable reduction of about £7,000, and that is because we are gradually catching up on the heavy amount of repair and rehabilitation occasioned by the war, the steps we have taken in that direction having enabled us to reduce the figure to the amount shown in that item.

Lower in the same column it will be seen that when we come to administration we have spent something like £1,000 less, and I am sure you will take no exception to that. The balance of profit is increased by nearly £3,400, which again is eminently satisfactory, as I think you will agree. The other side of the account simply shows the increases occasioned by the extended sales of gas. There are certain increases in the rental of meters and stoves, and residual products, all of which contribute to balancing the statement I have just mentioned on the debit side.

Coming to the profit and loss account I think I need only call your attention to the fact that the balance carried forward, amounting to £6,617, is an increase of about £600 compared with a year ago, which again I think you will agree is quite satisfactory. Coming to the balance sheet, this is in a slightly altered form this year to comply with new legislation. It is, I think, a little more explicit and intelligible to the ordinary proprietor, apart from those who have special accountancy qualifications, which I have not. There is one point that will be of especial interest to those concerned with gas business, and that is the extraordinarily small amount of issued capital employed by the Company. The authorized capital is £150,000, but the actually issued capital is only just over £44,000. Applying a criterion that has often been applied before, you will see that the investments of the Company stand at over £52,000, so that it would appear that these investments balance entirely, with a considerable margin, the issued capital. The Company, of course, has a large amount of money invested in their own current assets, and that has been provided by the proprietors, who have turned back into the company profits which might legitimately have been provided. It will be agreed that the figure of £44,000 for an undertaking which is now selling over 60 million cubic feet of gas is abnormally small. It would be small even for this country, and it is extraordinarily small when you think of an undertaking carried on under the difficulties which we have experienced in the Mediterranean.

Current liabilities and provision therefor are just over £20,000, while current assets, some of which I have already referred to, are just under £56,000, which represents a very healthy relationship. I do not think I need give you any other figures, but what does concern the proprietors is the future of the Company. We are operating in Malta under a concession, and a concession must of necessity have a definite date of termination, and we have to contemplate the position at the termination of our concession. We think that we may possibly secure a continuation of the concession having regard to certain elements in the case, such as the precise drafting of the concession itself, our amicable relations with the Government in Malta, and the general position created by our past operations. I felt that it was my duty to make some reference at this meeting to the possible termination of the concession, but I do not want to go further into the matter at this juncture.

We have every reason to believe that the marked progress in the development of the Company in the last two years can be maintained at least at its present level during the ensuing twelve months. There is some reasonable assurance that we shall hold the ground we have gained since the war in that regard. I will not trouble you with any further remarks, but I will now move the resolution: "That the report of the Directors, together with the accounts annexed thereto, be and are hereby approved and adopted."

Mr. FRANK H. JONES, M.I.C.E., seconded the resolution, which was carried unanimously.

The CHAIRMAN: I now have pleasure in moving: "That final dividends at full rates be declared on the First and Second Preference stocks, and a dividend of 4% (free of income tax) on the Ordinary stock, making for the year (with the interim dividend paid on 1st January last) a total distribution of 7% on the First Preference stock, 7½% on the Second Preference stock, and 8% (free of income tax) on the Ordinary stock."

Commander HYDE C. BURTON seconded the resolution, which was carried unanimously.

The CHAIRMAN: I now move—and I do so with very great pleasure—"That Mr. Frank Harding Jones, M.I.C.E., be and is hereby re-elected a Director of the Company." You will have gathered from the few remarks I have made that the administration of the Company demands, and I think receives, rather special qualifications in those responsible for it. Omitting my own personality I can say that you have on your Board men of most marked distinction in the Industry, technically, financially, and administratively. We have reason to be glad that such is the case, and I am sure that no-one could make a more complete contribution to the administration of the Company than Mr. Frank H. Jones, who is probably one of the most prominent personalities, technically and administratively, in the Gas Industry.

Sir GEORGE EVETTS: I have great pleasure in seconding the resolution, and in endorsing all you have said about Mr. Jones.

The resolution was carried unanimously, and Mr. Jones briefly returned thanks.

On the proposition of Mr. A. D. DODGSON, seconded by Commander HYDE C. BURTON, Mr. William Cash, Junr., M.A., F.C.A., was re-elected Auditor.

Mr. DODGSON: Before the Chairman declares the meeting closed I wish to do something which is more than formal, and that is to move, on behalf of all the proprietors, a very hearty vote of thanks to the Chairman, the Directors, the staff, and all the employees of the Company for another very successful year's trading.

The CHAIRMAN: Thank you very much. I am sure we are all very much obliged for your compliment, which will be transmitted to all those who are concerned. I am sure they will be gratified.

Extraordinary Meeting

The MANAGING DIRECTOR and SECRETARY then read the notice convening an Extraordinary General Meeting of the Company, and the following resolution, proposed by the Chairman and seconded by Mr. A. D. Dodgson, was carried unanimously: "That the following words be added to Article 66 of the Company's Articles of Association: 'A Director may be appointed at any age and no Director shall be required to retire by reason of his having attained any particular age.'"

NEW SOUTH WALES STATISTICS

We have received from the Department of Local Government, Gas Engineering Branch, Sydney, an analysis of production and distribution costs, and of selling prices, for the year ended Dec. 31, 1946, relating to the 37 gas undertakings in New South Wales. The total comprises 22 municipal undertakings and 15 companies, against 19 and 18 respectively in the previous analysis, the company undertakings at Camden, Grenfell, and Kiama having been taken over by the local authorities.

The Australian Gas Light Company remains by far the biggest undertaking, with a total make lor 1946 of 11,554,756,000 cu.ft. and sales amounting to 10,534,195,000 cu.ft., while the Molong (municipal) undertaking remains the smallest, with a total make of 3,541,000 cu.ft. and sales amounting to 2,132,000 cu.ft. The former undertaking has 306,257 consumers and the latter only 173. The idea that size alone is a criterion of efficiency is disproved by the fact that neither of these undertakings appears at the head or foot of the analysis of gas prices. The cheapest gas in New South Wales in 1946 was sold by the City of Newcastle Gas Department, with an average rate of 61.8d. per 1,000 cu.ft. The dearest was 159d. per 1,000 cu.ft. at Camden.

Coke was sold at 17s. per ton by the Australian Gas Light Company, the cheapest in the country; the dearest was 154.5s. per ton at Bega, which also realized the highest price for tar, 12.2d. per gall., against the low price of 1.67d. per gall. charged by the Newcastle Company.

The total gross expense into holders varied considerably between the 37 undertakings, the highest being 181.8d. per 1,000 cu.ft. at Grenfell, and the lowest 33.2d. at Newcastle.

The North British Association of Gas Managers will hold its annual meeting at the Cowdray Hall, Aberdeen, on Sept. 9, under the presidency of Mr. H. S. Milne. Golf and bowls competitions will be played on Sept. 8, and there will be a civic reception in the Art Gallery by the Lord Provost, Mr. Duncan Fraser, on the evening of Sept. 9.